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IN THE CLAIMS:

Claim 1 (currently amended): A method of measuring acceleration of an engine comprising the steps of:

selecting an engine test stand having a base having an inertia shaft mounted thereto and coupled to a gear box, said engine test stand also having an engine cart for mounting an engine thereto and positionable for coupling said engine to said gearbox, said inertia shaft having selectively engaging ~~weights~~ inertia wheels attached thereto;

mounting an engine to said engine cart;

positioning said engine cart for alignment of an said engine with said gear box;

coupling said engine to said gear box;

starting said engine;

accelerating said mounted engine through a predetermined RPM range; and

measuring elapsed times at preselected RPMs; whereby acceleration of an engine can be recorded under selected loads to simulate race track lengths.

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Claim 2 (currently amended): Apparatus for measuring acceleration of an engine comprising:

a base;

an inertia shaft rotatably mounted to said base;

a gear box attached to said base and coupled to said inertia shaft;

an engine mounting cart, having means for removably attaching an engine thereto;

a plurality of ~~weights~~ inertia wheels selectively engageable to said inertia shaft for rotation therewith; and

at least one sensor mounted for reading the rotation of said inertia shaft so that elapsed times can be measured at preselected RPM points during acceleration of an engine; whereby acceleration of an engine can be recorded under selected loads to simulate race track lengths.

Claim 3 (currently amended): The apparatus for measuring acceleration of an engine in accordance with claim 2 in which said plurality of ~~weights~~ inertia wheels includes at least one floating ~~weight~~ inertia wheel mounted on bearings on said shaft.

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Claim 4 (currently amended): The apparatus for measuring acceleration of an engine in accordance with claim [[3]] 2 in which each of said plurality of ~~weights~~ inertia wheels has a generally cylindrical shape.

Claim 5 (original): The apparatus for measuring acceleration of an engine in accordance with claim 2 having a plurality of sensors mounted for reading the rotation of said inertia shaft.

Claim 6 (canceled).

Claim 7 (original): The apparatus for measuring acceleration of an engine in accordance with claim 2 in which said engine cart has a plurality of wheels for rolling said cart and mounted engine into place for coupling to said gear box.

Claim 8 (original): The apparatus for measuring acceleration of an engine in accordance with claim 7 in which said engine cart has means for attaching said cart to said base.

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Claim 9 (currently amended): The apparatus for measuring acceleration of an engine in accordance with claim [[6]] 5 in which one of said plurality of sensors is mounted for reading the RPMs of said engine crankshaft.

Claim 10 (canceled).

Claim 11 (canceled).